

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



## AGRICULTURAL NOTES

PUBLISHED BY

PORTO RICO AGRICULTURAL EXPERIMENT STATION, MAYAGUEZ  
OFFICE OF FARM MANAGEMENT, FEDERAL BUILDING, SAN JUAN

No.46 Page 1.

San Juan, Porto Rico, January, 1929.

## PORTO RICAN COFFEE SOILS NEED POTASH

By T. B. McClelland

The market price of coffee in recent years has been sufficiently high to bring prosperity to those with much coffee for sale. Unfortunately, the coffee planters in general have had small crops and so have not enjoyed the prosperity which otherwise might have been theirs. The reasons for these small crops have been numerous. Hurricanes, droughts, insects, diseases, weeds, the condition of the shade, the age of the coffee plants and the impoverished condition of the soil have all contributed in great or small degree to the disastrous result. Over some of these factors the planter has no control. Others he can modify. He can make his soil more productive by adding to it the minerals needed by the coffee plant. Not only has it been demonstrated that coffee production can be increased by fertilization but it has been shown that this can be done with a handsome cash profit to the planter.

In 1916 a fertilizer experiment was begun on a coffee plantation at Las Vegas. Four plats were originally included and two years later a fifth was added. The plats were of 1/10 acre each, but are discussed in acre rates, and the production given in terms of dry coffee beans, parchment removed, estimating 5 pounds to the almud of cherries.

The location for these tests was selected as presenting the most nearly uniform conditions which the writer was able to find in Porto Rican coffee, the slope of the land being gentle and regular and the trees mature, remarkably uniform and in orderly rows.

Fertilizer has been applied semi-annually from 1916 to date, usually in December and again in May or June. The amount per year previous to 1920 was as follows:

Plat 1	Plat 2	Plat 3	Plat 4	Plat 5
100 lbs. sodium nitrate	Nothing	300 lbs. sodium nitrate	600 lbs. sodium nitrate	300 lbs. sodium nitrate
				300 lbs. super-phosphate

The average annual production rates from 1916 to 1920, inclusive, were as follows:

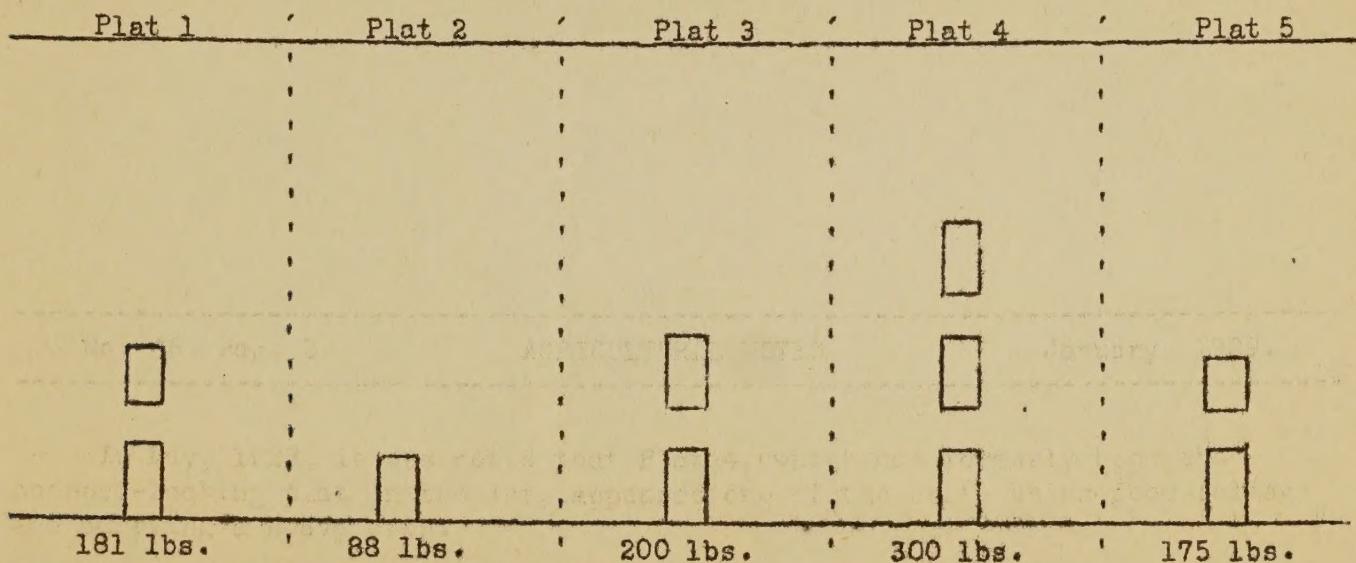
Plat 1	Plat 2	Plat 3	Plat 4	Plat 5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/>				
<input type="checkbox"/>				
<input type="checkbox"/>				
431 lbs.	439 lbs.	389 lbs.	299 lbs.	425 lbs.

From the production in this five-year period no benefit from the application of sodium nitrate was evident. It is, however, very evident that Plat 2



In May, 1928, it was noted that Plat 4, which had formerly been the poorest-looking plat in the lot, appeared one of the best, being <sup>in</sup> good foliage and carrying a heavy crop.

The hurricane damage to these plats was most surprisingly light. When inspected a month after the hurricane, the trees were vigorous, in good foliage, and many carried green and ripe cherries. A survey of the trees individually showed that no tree had been wholly destroyed, and the highest destruction through breakage in any plat was placed at about  $2\frac{1}{2}$  per cent of the total growth in the plat. The loss of crop through breakage of branches was not material, as most of the broken branches were only partly severed and matured their crop. To what extent the crop was blown off by the hurricane is impossible to estimate, but from the appearance of the trees it is believed that the recorded crop gave a fair indication of the relative production of the different plats, although reduced in amount. The recorded production was as follows:



It is interesting to see that the lowest yield from any fertilized plat was twice as great as that from the unfertilized plat, bearing in mind these plat relations in the first five-year period of recorded yields when Plat 2 led in production. It is also worthy of note that Plat 4, formerly the poorest plat in the experiment, at two years after the first application of a complete fertilizer high in potash, led in production. Whereas the two plats which have received complete fertilizer through a long period of years averaged 113 per cent greater production than the check, the two which in the last two years have received three times as much potash as the other two fertilized plats, averaged 173 per cent greater production than the check. The additional potash much more than repaid its cost. At present prices of coffee and fertilizer it pays to fertilize coffee. This fertilizer should run high in potash. Phosphoric acid does not appear to be needed on certain soils; on others it may be of value. The application to fairly good coffee of 100 pounds of ammonium sulfate and 200 pounds of potassium sulfate (or potassium chloride) per acre at six-month intervals should bring to the coffee planter handsome returns on his investment in fertilizer. The applications may be made in late November or December and again in May or June. The fertilizer should be well distributed over the range of the coffee roots and worked into the soil.

